UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,440	03/15/2001	Gareth Hougham		4926

7590 07/14/2004

Thomas A. Beck
26 Rockledge Lane
New Milford, CT 06776

EXAMINER
PONTAINE, MONICA A

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/809,440	HOUGHAM, GARETH	
	Examiner	Art Unit	
	Monica A Fontaine	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4 and 7-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4 and 7-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 April 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 9 is objected to because of the following informalities: It is believed that the word "momomeric" is a typographical error and should be --monomeric--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1, line 10 claims the time period "one week and beyond". As this can include a time period of infinite proportion, this renders the claim indefinite. A specific upward bound of the time period should be claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller (U.S. Patent 5,770,140), taken with Ciullo's "The Rubber Formulary", in view of Domeier et al. (U.S. Patent 6,422,528). Regarding Claim 1, Muller shows that it is known to carry out a method of making an article, the method substantially eliminating pattern distortion of said article formed as a result of the method (Column 3, lines 35-37), comprising inserting a blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mix into an enclosed mold (Column 2, lines 53-67; Column 3, lines 35-37); retaining said blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mix in said enclosed mold to maintain a precise dimension during a two phase curing process (Column 47-50; It is noted by the examiner that by being in an enclosed mold, the retained mix therein will naturally maintain the precise dimension of the mold cavity.), comprising substantially curing and crosslinking said blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mix in said enclosed mold for a period of 90 minutes at a substantially constant temperature to form an article (Table II, t90 (min)), wherein the pattern geometry of said article so-formed is not distorted (Column 3, lines 35-45); followed by a subsequent cure of said substantially cured blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mix in said enclosed mold at a temperature of which is higher than said substantial end-use temperature of said article formed from said blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mixand is sufficient to provide required dimensional integrity for pattern faithfulness and subsequent cure is sufficient to harden said elastomer reactive mix to a desired elastic modulus (Column 2, lines 47-50; Column 3, lines 35-45; Table II), said two phase curing in an enclosed mold preventing permanent shrinkage of said article formed from said siloxane polymeric elastomer reactive mix (Column 2, lines 47-50;

Column 3, lines 35-42; It is noted by the examiner that by being cured in an enclosed mold, the retained mix therein will be prevented from experiencing permanent shrinkage.); removing said cured article from said blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mix from the enclosed mold after completion of said two phase curing process and forming a desired article, as a result of the two phase curing steps in said enclosed mold having minimal pattern distortion, being a flexible and soft elastomeric article (Column 3, lines 38-41; Table II, Hardness Values). When taken with Ciullo's "The Rubber Formulary", it is reiterated that Muller shows the formation of a flexible and soft elastomeric article (See Page 90-91: Muller's hardness values are between those of a rubber band and tire tread which are both soft and flexible), and that Muller shows a first cure time of 90 minutes (See Pages 84 and 88 for explanation of t90). Muller does not show the specifically-claimed temperatures and making a stamp for microcontact printing. Domeier et al., hereafter "Domeier," show that it is known to carry out a method for making a stamp for microcontact printing, wherein processing temperatures while making a stamp article are between 75°C and 200°C (Column 6, line 42; Column 7, lines 7-10) and wherein a stamp for microcontact printing is made from polymeric materials (Column 8, lines 55-67, i.e. "other miniaturized devices"). Domeier and Muller are combinable because they are concerned with a similar technical field, namely, that of molding methods which use enclosed molds to form micro-scale articles. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to select a processing temperature from those disclosed by Domeier to make a microcontact stamp with Muller's process and materials in order to form a stamp which possesses the desired properties (e.g. hardness, geometry).

Regarding Claim 4, Muller shows the process as claimed as discussed in the rejection of Claim 1 above, wherein said blend of polysiloxane oligomer-siloxane monomer elastomer reactive-mix in an enclosed mold is a vinyl addition-type siloxane two-component mixture (Column 2, lines 53-67), meeting applicant's claim.

Regarding Claim 7, Muller shows the process as claimed as discussed in the rejection of Claims 1 and 4 above, but he does not specifically show wiring dimensions of the formed article. Domeier shows that it is known to carry out a method of manufacturing a stamp wherein wiring and other interior features' dimensions contained therein are microscopically small and registration of subsequent layers of such display is within microns over many inches (Column 6, lines 4-12; Column 7, lines 52-67). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Domeier's dimensions in Muller's process in order to produce an article according to a desired specification.

Regarding Claim 8, Muller shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show manufacturing a microelectronic pattern. Domeier shows that it is known to carry out a method of manufacturing a microelectronic stamp (Column 1, lines 23-29). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Muller's process to make Domeier's microelectronic stamp in order to make the stamp in the most efficient manner possible.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Domeier, as applied to claims 1 and 4 above, further in view of Sangokoya (U.S. Patent 5,731,253). Muller shows the process as claimed as discussed above, but does not show the

specifically-claimed monomeric moities. Sangokoya shows that it is known to use a siloxane system that contains moieties of hexamethylcyclotrisiloxane and hexamethyledisiloxane (Column 10, line 31). Sangokoya and Muller are combinable because they are concerned with a similar technical field, namely, that of siloxane compounds and their applicability. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Sangokoya's specific siloxane system moiety as the elastomeric reactive material in Muller's and Domeier's molding process in order to produce an article having characteristics of the molded moiety.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Domeier, as applied to claims 1 and 4 above, further in view of Kim (U.S. Patent 5,512,131). Muller shows the process as claimed as discussed above, but does not show using a specific siloxane system. Kumar teaches that it is known to use Sylgard®, a polydimethylsiloxane widely-known in the art, as the silxane system (Column 8, line 53). Kumar and Muller are combinable because they are concerned with a similar technical field, namely, that of molding processes which use siloxanes as the molding materials. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Kumar's Sylgard® as the elastomeric reactive system in Muller's and Domeier's molding process in order to create a stamp with characteristics of molded Sylgard®.

Response to Arguments

Applicant's arguments with respect to claims 1, 4, 7-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following publications have been cited as prior art with regard to microforming processes in general:

U.S. Patent 4,097,294 to Rice et al.

U.S. Patent 4,254,069 to Dominguez et al.

U.S. Patent 4,298,701 to Meyborg et al.

U.S. Patent 5,494,618 to Sitzmann et al.

U.S. Patent 5,506,087 to Lapin et al.

U.S. Patent 5,698,485 to Bruck et al.

U.S. Patent Application Publication 2003/0006527 to Rabolt et al.

U.S. Patent 6,679,471 to Domeier et al.

U.S. Patent 6,689,859 to Li et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 571-272-1198. The examiner can normally be reached on Monday-Friday 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maf
July 12, 2004

MARK EASHOO, PH.D
PRIMARY EXAMINER
Art Unit 1732
12/Jul/04